

CLAIMS

1. Method for determining characteristics of components of a satellite communication channel,

5 comprising:

generating a first pseudo noise signal $PN(t)$;

modulating said clean carrier signal $f(t)$ with said first pseudo noise signal $PN(t)$ to generate said spreaded clean carrier signal $s(t)$;

10 transmitting said spreaded clean carrier signal $s(t)$ through said communication channel at a first predetermined level;

receiving a receive signal $s'(t)$ corresponding to said spreaded clean carrier signal $s(t)$ after having travelled
15 through said communication channel;

correlating said receive signal $s'(t)$ with said first pseudo noise signal $PN(t)$ to generate said despreaded carrier signal $f'(t)$;

determining the group delay of the communication
20 channel at the selected frequency of the clean carrier signal $f(t)$ on the basis of the time delay between the first pseudo noise signal $PN(t)$ and said receive signal $s'(t)$; and/or

determining the amplitude response of the
25 communication channel at the selected frequency of the clean carrier signal $f(t)$ on the basis of the correlation peak between the first pseudo noise signal $PN(t)$ and said receive signal $s'(t)$.

2. Method according to claim 1, wherein said first predetermined level is adjusted by a predetermined threshold below the level of a transmitted payload signal of an adjacent satellite communication channel.

3. Method according to claim 1, wherein said first predetermined level of said spreaded clean carrier signal $s(t)$ is adjusted by the following steps:

- a) setting a preliminary level which corresponds to a lower limit in the communication channel;
- b) processing said despreaded carrier signal $f'(t)$ in order to determine actual characteristics of said despreaded carrier signal $f'(t)$
- c) determining the deviation between the actual characteristics and predetermined desired characteristics of said despreaded carrier signal $f'(t)$;
- d. 1) if the deviation is above a predetermined deviation: increasing the preliminary level by an incrementation parameter and repeating steps b) to d. 1;

d.2) otherwise allocate the actual preliminary level to said first predetermined level.

4. Apparatus for determining characteristics of components of a satellite communication channel, comprising:

first pseudo noise signal generating means (9) for generating a pseudo noise signal $PN(t)$, said clean carrier signal $f(t)$ is modulated with said first pseudo noise signal $PN(t)$ to generate said spreaded clean carrier signal $s(t)$;

transmitting means (11, 12, 13) for transmitting said spreaded clean carrier signal $s(t)$ through said communication channel at a first predetermined level;

receiving means (13, 14) for receiving a receive signal $s'(t)$ corresponding to said spreaded clean carrier signal $s(t)$ after having travelled through said communication channel;

first correlating means (14) for correlating said receive signal $s'(t)$ with said pseudo noise signal $PN(t)$ to generate said despreaded carrier signal $f'(t)$;

means for determining the group delay of the communication channel on the basis of the time delay between the first pseudo noise signal $PN(t)$ and said receive signal $s'(t)$; and/or

means for determining the amplitude response of the communication channel at the selected frequency of the clean carrier signal $f(t)$ on the basis of the correlation peak between the first pseudo noise signal $PN(t)$ and said receive signal $s'(t)$.

5. Apparatus according to claim 4, wherein said first predetermined level is adjusted by a predetermined threshold below the level of a transmitted payload signal of an adjacent satellite communication channel.

6. Apparatus according to claim 4, further comprising for adjusting said first predetermined level of said spreaded clean carrier signal:

setting means for setting a preliminary level which
5 corresponds to a lower limit in the communication channel;

processing means for processing said despreaded
carrier signal $f'(t)$ in order to determine actual
characteristics of said despreaded carrier signal $f'(t)$ and
for determining the deviation between the actual
10 characteristics and predetermined desired characteristics
of said despreaded carrier signal f' ;

increasing means for increasing the preliminary level
by an incrementation parameter if the deviation is above a
predetermined deviation;

15 allocation means for allocating the actual preliminary
level to said first predetermined level if the deviation is
below or equal a predetermined deviation.